DETACHABLY INTERCONNECTED HANDLE AND PAINT BRUSH

Field of the Invention

This invention relates to paint applicator structures, especially brushes, having a handle portion detachably connected with a matingly engageable paint applicator portion.

Background of the Invention

The painting of various surfaces often involves use of different types of paints. The same painter, even over the course of a relatively short time interval, may need to use different paints and/or different paint brushes to accomplish the painting of different surfaces or objects.

The term "paint" can include a wide variety of different paints, coatings, sealants and the like which may be "painted", that is, applied, spread or smoothed, using a brush whose applicator or brush portion may or may not include bristles, although a brush with bristles is still the most commonly used structure.

The bristles of a brush should be cleaned shortly after the brush has been used for paint application, and before the paint has dried; otherwise, the bristles may become damaged with paint which cannot be removed, thereby reducing the effectiveness of the brush in applying a uniform coating.

Moreover, the cost of quality paint brushes appropriate for the particular application has become a significant part of the total cost of painting.

One way that these and related problems can be solved or mitigated is to utilize paint brush structures which have brush portions that are detachable from handle portions. Many potential benefits and advantages are provided with such a brush structure. One advantage of such a structure is that a painter who is actively

engaged in carrying out a painting task, and who has completed use of one brush, can simply detach the used brush portion from the handle portion, promptly immerse that brush portion in a suitable cleaning liquid, immediately associate the handle portion with a different, perhaps more appropriate, brush portion, and continue with another painting phase. Thereby, the painter can continue his painting without having to stop and perform a brush cleaning operation and without having to use a multiplicity of different brushes with permanently associated handles. Typically, once a bristled brush portion that is freshly contaminated with paint is immersed in the cleaning liquid, the bristle cleaning procedure can be postponed and subsequently accomplished.

Another advantage is that the cost of paint brushes is reduced. Purchasing a plurality of brushes with permanently associated handles can be substantially greater than the cost of purchasing, for example, one brush handle and a plurality of bristle packs that are each individually detachably associatable with the brush handle.

An additional advantage is that the space and storage requirements for detachable brush portions are less than for brushes with permanently associated handles, a factor which is particularly important to professional painters.

Another advantage is that, when using paints, coatings, sealants and the like that set rapidly, or are difficult to remove or clean after application, detachable handle and brush assemblies can be very useful and practical. A used or contaminated brush assembly can be simply separated and discarded.

A variety of different paint brush structures with removable brush portions have previously been proposed;

but, so far as now known, none has come into general commercial availability because of various problems and disadvantages, including cost. One apparently common problem associated with such prior art brush assemblies has been their structural weaknesses or even failings, particularly such that occur or are experienced after a short period of assembled brush structure use.

Included among other significant problems is the assembly procedure. A particular brush assembly or disassembly procedure may be perceived to be too complicated, time consuming, inconvenient, unreliable, or messy, so that purchase and use of a handle and brush combination is undesirable.

There seems to have been a long perceived but currently increased need in the paint applicator, particularly paint brush, field for a practical, cost-effective, reliable and durable paint applicator system that incorporates a single handle subassembly that is engageable not just with one, but also with a plurality of different paint applicator, particularly paint brush, subassemblies. The present invention is believed to fulfill this need.

Brief Summary of the Invention

More particularly, this invention relates to improved paint applicator structures, especially paint brush structures, wherein a handle portion is detachably connected with a matingly engageable paint applicator portion.

The invention further relates to improved handle subassemblies and to improved paint applicator subassemblies, especially brush subassemblies, that cooperatively engage with, and disengage from, the handle subassemblies.

The improved assembled applicator structures, each including a component handle subassembly, and a

component paint applicator, especially a paint brush, subassembly, provide a variety of advantages and features.

An embodiment of the inventive handle subassembly incorporates a handle and a tool connector. An embodiment of the inventive paint applicator, preferably a paint brush, subassembly incorporates an applicator ferrule with a handle connector. While various applicator structures and applicator ferrule structures can be employed in the practice of this invention, since brushes with bristles are believed to be the most common type of paint applicator, bristled paint applicators are usually described and illustrated in the present specification and accompanying drawings, and constitute a presently preferred paint applicator portion for use in the practice of the present invention.

In, for example, an inventive paint applicator structure that incorporates a brush subassembly and a handle subassembly, the brush ferrule of the brush subassembly is provided with a preferably rearwardly extending handle connector that is nestably and slidably receivable into the tool connector of a handle subassembly that is connectable therewith. Usually and preferably, in the handle subassembly, the tool connector is located at one end portion of a handle portion, and usually and preferably the handle portion is elongated and extends rearwardly relative to that one end portion.

The handle connector of a brush subassembly and the tool connector of a handle subassembly, when the handle connector is connected with the tool connector, become engaged and locked together. The handle connector includes a pair of opposed, resilient arms that each has an associated outturned tab, and the tool

connector has a pair of opposed slots, or windows, defined in a rearward portion thereof. In the resulting assembly or structure comprised of interconnected brush subassembly and handle subassembly, each tab engages one of the slots.

To disengage a handle subassembly from a brush subassembly, manual depression of exposed tabs releases the handle connector from the tool connector and permits the brush subassembly to be slidably separated from the handle subassembly.

In a brush subassembly that incorporates bristles, the bristle plurality is conventionally, conveniently, and preferably arranged in a pack and the rear end portions of the bristles in the bristle pack are conventionally connected to a pack base which can comprise, variously, an adhesive, an adherent plastic, or the like. The pack base is connected to, and preferably circumscribed by, the forward region of a brush ferrule.

In a typical handle subassembly, the tool connector at the forward end region of the handle portion is connected to the handle portion. The tool connector has an open forward end. In a typical paint applicator subassembly, the handle connector is located at the rearward end portion of the brush ferrule structure. The handle connector is slidably inserted into the open forward end of the tool connector during component subassembly engagement.

A handle subassembly and a paint applicator subassembly can each be variously constructed as those skilled in the art will readily appreciate.

A handle connector of, for example, a brush subassembly or other tool, is provided with at least one pair of generally opposed resilient arms. Each arm extends rearwardly and is located along a portion of a

different opposite side region of the handle connector. Each arm has both a shoulder portion that is connected to an adjacent connector body side region and also an opposite open end portion that is yieldingly biased for achieving lateral flexural movements from a neutral or rest position. During mating interconnection of a handle connector within a tool connector, the arms are located and configured to extend into the tool connector and to become somewhat flexed laterally by opposed adjacent sidewall portions of the tool connector. As a handle connector reaches a position of substantially full receipt within an associated tool connector during interconnection, an outstanding side tab at or adjacent to the open end portion of each arm reaches a laterally aligned relationship with, and is yieldingly urged into engagement with, a mating slot provided through each opposite but adjacent sidewall portion of the tool connector, Each tab then engages a slot, thereby interlocking the handle connector of the brush subassembly with the tool connector of the handle connector.

To disengage the brush subassembly from the handle subassembly, an exposed surface portion of each tab is manually depressed, thereby releasing the tabs from their respective slots and permitting the handle connector to be slidably separated from the tool connector.

A handle connector of a brush subassembly includes a central outwardly projecting portion that extends into the tool connector during component assembly. The projecting portion also rearwardly extends preferably beyond the open end portion of each arm. When handle connector is so interlockingly engaged with the tool connector of the handle subassembly, this projecting portion extends interiorly in the tool

connector and abuts against interior rearward portions of the tool connector.

The engaged association achieved between the tool connector and the handle connector provides significant stability and strength for the assembly of the brush subassembly and the handle subassembly. The invention achieves a handle subassembly and also an applicator or tool subassembly. These respective subassemblies function together as components that cooperate to provide a paint applicator (preferably a brush) assembly or structure that overcomes the disadvantages of prior art paint brushes incorporating a handle portion that is detachable from a brush portion. The inventive assembled paint applicator structure that is comprised of such two component subassemblies is characterized by a plurality of desirable features, including but not limited to reliability, durability, rapid, easy and convenient assembly and disassembly of components, simplicity, and associated economies of use. A paint applicator subassembly, such as a brush subassembly, taken together with associated components which include typically a brush ferrule structure, a handle connector, and a paint applicator (such as a brush), can be considered to comprise a paint applicator cartridge (or a brush cartridge when a brush is involved). An applicator cartridge can be variously constructed as those skilled in the art will readily appreciate.

For one example, a conventional type of subassembly comprised of bristle plurality, pack base and circumscribing brush ferrule that has a rearwardly opening mouth can be associated with a linking subassembly such as provided by the present invention. Such a linking subassembly may comprise a secondary brush ferrule having an open forwardly opening mouth,

and a rearwardly and centrally extending handle connector. The forwardly opening mouth of the secondary brush ferrule is nestably received in the rearwardly opening mouth of the brush ferrule. The resulting adjacent portions of the brush ferrule can if desired be bonded by means of an adhesive, such as an epoxy resin or the like, to respective adjacent portions of the secondary brush ferrule, thereby easily and simply permanently mounting the secondary brush ferrule of the linking subassembly to the subassembly that incorporates the bristle plurality.

Various subassemblies incorporating bristle pluralities can be thus mounted to different embodiments of a linking subassembly. Each linking subassembly incorporates a similar handle connector. Thus, for example, a plurality of brush cartridges, each with, for example, a different bristle pack, can be fabricated, and each brush cartridge can interchangeably yet detachably associate with tool connector of the same handle subassembly.

An applicator cartridge, such as a brush cartridge, and a handle subassembly, of this invention, can be made and sold independently of one another, if desired, and each can comprise a separate item of commerce. Such subassemblies may be sold together as a group, perhaps in a common package, yet at the time of sale the subassemblies need not be interconnected. A customer or user can assemble and use the subassemblies in a manner that the customer or user may choose, as those skilled in the art will readily appreciate. Since a brush subassembly and a handle subassembly can each be variously constructed and formed, each can incorporate various components and features. Each can have various equivalent structures, as those skilled in the art will readily appreciate, without departing from

the spirit and scope of the invention. A paint brush assembly or assembled structure and its component subassemblies can, if desired, incorporate various features.

Optionally, but preferably, a tool connector can incorporate rail and/or guidance projections on interior surface portions thereof which contact predetermined portions of a handle connector, thereby to enhance a close fitting association between these connectors and to enhance strength and stability of the connection achieved therebetween.

Optionally, the handle portion of a handle subassembly can be associated at its open terminal end with a paint can opener.

Other and further objects, aims, features, purposes, advantages, functions, embodiments, and the like will be apparent to those skilled in the art from the teachings of the present specification taken with the accompanying drawings and the appended claims.

Brief Description of the Drawings:

In the drawings:

Fig. 1 is an environmental perspective view of one embodiment of a paint brush assembly of the present invention;

Fig. 2 is an enlarged perspective view of the paint brush assembly of Fig. 1;

Fig. 3 is an exploded perspective view of the paint brush assembly of Fig. 1;

Fig. 3A is a view similar to Fig. 3, but showing an alternative embodiment of the paint brush assembly, some parts thereof being broken away, and some parts thereof being shown in section;

Fig. 4 is a side elevational view of the paint brush assembly of Fig. 1;

Fig. 5 is an end elevational view of the paint brush assembly of Fig. 1;

Fig. 6 is a transverse medial longitudinal vertical sectional view taken along the line VI - VI of Fig. 4;

Fig. 7 is a perspective view of the paint bush assembly of Fig. 1, some parts thereof being broken away;

Fig. 8 is a perspective view of the handle subassembly of the brush assembly of Fig. 1, some parts thereof being broken away;

Fig. 8A is an exploded perspective view of an alternative embodiment of a brush subassembly, some parts thereof being broken away and shown in section;

Fig. 8B is a view similar to Fig. 8A, but showing another alternative embodiment of a brush subassembly, some parts thereof being broken away and shown in section;

Fig. 8C is a perspective view of a further alternative embodiment of a brush subassembly, some parts thereof being broken away and some parts thereof being shown in section;

Fig. 9 is a side elevational view of the linking subassembly that is incorporated into the paint brush assembly of Fig. 1;

Fig. 10 is a view similar to Fig. 9, but showing an alternative embodiment wherein the linking subassembly is adapted for use with a larger bristle pack;

Fig. 11 is a view similar to Fig. 9, but showing an alternative embodiment wherein the linking subassembly is adapted for use with a bristle pack that is larger than the bristle pack shown in Fig. 10;

Fig. 12 is an enlarged, fragmentary, detail-type, side elevational view through the region of

interconnection between the tool connector and the handle connector of the paint brush assembly embodiments of each of Figs. 1 and 3A, each of the arms of the handle connector being shown in their laterally fully inwardly deflected state, the arm connector portions being shown in phantom in their interconnected state with the tool connector, some parts thereof being broken away, and some parts thereof being shown in section;

Fig. 13 is a side elevational view of the paint brush assembly of Fig. 1, but with the brush subcombination removed from the linking subassembly, some parts thereof being broken away and some parts thereof being shown in section;

Fig. 14 is a fragmentary, exploded perspective view of an alternative embodiment of the paint brush assembly of Fig. 1;

Fig. 15 is a view similar to Fig. 14, but showing another alternative embodiment of the paint brush assembly of Fig. 1;

Fig. 15A is a view similar to Fig. 15, but showing an alternative embodiment of the paint brush assembly of Fig. 15;

Fig. 16 is a fragmentary, side elevational, exploded view of the embodiment shown in Fig. 15, some parts thereof being broken away and some parts thereof being shown in section;

Fig. 17 is a fragmentary, comparative, end elevational, exploded view of the embodiment shown in Fig. 15;

Fig. 18 is an exploded, perspective view of a handle subassembly embodiment that is provided with a paint can opener;

Fig. 19 is a fragmentary, lateral, medial sectional view through the region of the tool connector

of a handle subassembly embodiment such as shown in Figs 15, 17 and 18;

Fig. 20, parts A, B and C, each show in side elevation a different linking subassembly similar to the type utilized in the embodiment shown in Figs. 15, 16 and 17, each linking subassembly incorporating a secondary brush ferrule that progressively decreases in size proceeding from Fig. 20, part A through Fig. 20, part C, and wherein each respective linking subassembly is engaged with both a brush subcombination which is shown fragmentarily in phantom and also with a handle subassembly which is also shown fragmentarily in phantom;

Fig. 21, parts A, B and C each show a bottom plan view of each of the respective linking subassemblies of Fig. 20, parts A, B and C;

Fig. 22 is a side elevational view showing the linking subassembly of each of Fig. 20, parts A, B, and C, and wherein each respective linking subassembly is engaged with both a brush subcombination and a handle subassembly which are each shown fragmentarily in phantom;

Fig. 23 is a top plan view of the linking subassembly of Fig. 20C;

Fig. 24 is a perspective view of a paint brush assembly embodiment that is equipped with an embodiment of a manually actuated, self-erecting brush prop wherein the prop is pivotably associated with a forward end region of the brush ferrule, the paint brush assembly being shown in a resting orientation with its prop erected;

Fig. 25 is an edge elevational view of the prop-equipped paint brush assembly of Fig. 24;

Fig. 26 is a side elevational view of the prop-equipped paint brush assembly of Fig. 24, but with the prop in its folded configuration;

Fig. 27 is an fragmentary enlarged, detail-type plan view showing the prop catch in its prop closed (stored) and prop retained position;

Fig. 28 is a view similar to Fig. 27, but showing the prop catch in its prop open position;

Fig. 29 is a view similar to Fig. 27, but showing the prop erected with the prop hinge and spring exposed;

Fig. 30 is a perspective view of one embodiment of a brush skirt for a paint brush;

Fig. 31 is a plan view of the brush skirt of Fig. 30;

Fig. 32 is an edge elevational view of the brush skirt of Fig. 30;

Fig. 33 is a is an edge elevational view of the brush skirt of Fig. 30 in functional but stand-by association with the paint brush assembly of Figs. 1-3 and 4-9;

Fig. 34 is a view similar to Fig. 33, but showing the brush skirt of Fig. 30 in functional and operational association with the same paint brush assembly;

Fig. 35 is a perspective view of the brush skirt and paint brush combination shown in Fig. 34;

Fig. 36 is a view similar to Fig. 30, but showing an alternative embodiment of the brush skirt;

Fig. 37 is a view similar to Fig. 32, but showing the brush skirt embodiment of Fig. 44;

Fig. 38 is a view similar to Fig. 35, but showing the brush skirt embodiment of Fig. 36 in functional and operational association with the paint brush assembly of Fig. 3A;

Fig. 39 is a view similar to Fig. 30, but showing an alternative embodiment of the brush skirt;

Fig. 40 is a transverse sectional view showing the brush skirt of Fig. 39 in functional but standby association with the assembled brush assembly of Figs. 15, 16 and 17;

Fig, 41 is a view similar to Fig. 40, but showing the brush skirt of Fig. 39 in functional and operational association with the paint brush assembly of Figs. 15, 16 and 17;

Fig. 42 is a perspective view showing the brush cartridge (brush subassembly) of Fig. 3 housed in a special package that is suitable for brush cartridge display and/or storage, the brush cartridge being shown in phantom in the package;

Fig. 43 is a perspective view of the package shown in Fig. 42;

Fig. 44 is a perspective view showing the brush cartridge embodiment of Fig. 3 housed in another special package that is suitable for brush cartridge display and/or storage;

Fig. 45 is an exploded side elevational view showing the brush cartridge of Fig. 3 with the package of Fig. 44, the bristles being fragmentarily shown;

Fig. 46 is a view similar to Fig. 44, but showing an alternative embodiment of the special package shown in Fig. 44;

Fig. 47 is a plan view of an illustrative package containing a handle subassembly and two different brush cartridges (brush subassemblies) which are each separately engageable with the handle subassembly;

Fig. 48 is a plan view of an illustrative package containing three different brush cartridges (brush subassemblies) each one of which is separately

engageable with a predetermined handle subassembly (not shown);

Fig. 49 is a perspective view of an illustrative non-bristle paint applicator cartridge wherein the bristle ferrule structure and handle connector of Fig. 3 are associated, in place of the bristle pack, with a disposable, bristle-free foam-type paint applicator member; and

Fig. 50 is a perspective view of a non-bristle roller type paint applicator cartridge wherein a paint applicator roller-type subassembly is in connected association with a handle connector of the type shown in Fig. 3.

Detailed Description

(A) Basic Structure

Referring to Figs. 1 through 3, and 4 through 8, there is seen an embodiment 30 of a paint brush assembly of the present invention. The paint brush assembly 30 incorporates a handle subassembly 31 and a brush subassembly (or bristle pack subassembly) 32. The handle subassembly 31 includes a tool connector 34, and the brush subassembly 32 includes a handle connector 43 which is disengagably engageable with the tool connector 34, as described below.

The handle subassembly 31 includes an elongated handle 33 and the tool connector 34 is connected to the forward end portion 33A of the handle 33. In the handle subassembly 31, the handle 33 and the tool connector 34 are preferably unitarily formed of molded plastic. The tool connector 34 has an open forward end or mouth 36 (see Fig. 3). The tool connector 34 preferably and as shown has laterally a generally cross-sectionally rectangular configuration. If desired, the rearward end portion 33B of handle 33 may have an aperture (not shown) defined in and

transversely extending therethrough to provide a means for hanging the handle subassembly 31 or the assembled brush assembly 30 from a hanger (not shown) or the like, if desired.

The brush subassembly 32 includes a plurality of aligned, parallel bristles (comprising a bristle pack) 38. As is common in the paint brush art, the individual bristles of pack 38 illustratively have aligned front end portions and their rear (or opposite) end portions are conventionally mounted together by adhesive, plastic or the like in a pack base 39 (see, for example, Fig.6 and also the corresponding brush assembly 81 and pack base 39' in Fig. 3A, for example). Those skilled in the art will readily appreciate that various bristles and bristle mounting means may be used in the practice of the present invention.

Typically, a bristle pack 38, as illustrated, for example, in Fig. 3, preferably has transversely a generally cross-sectionally rectangular configuration with rounded opposite side edges. However, in the bristle pack 38, the front or forward ends of the component aligned bristles are arranged so as to define a generally straight, angularly inclined, forward surface 38A relative to the body of the bristles 38, thereby to provide a bristle pack 38 which is adapted for the painting of inclined or irregular surfaces, as those skilled in the art of painting will readily appreciate. The rear (or opposite) ends of the bristles in pack 38 are correspondingly angularly inclined, and the conventional pack base 39 that is provided in and at the rear end region of the pack 38 generally diagonally extends.

Extending about and circumscribing perimeter regions of the rear end portions of the bristles 38 (and the rear end region of the pack 38) is a brush ferrule

41 that has a sleeve-like or hollow configuration as shown illustratively in, for example, Figs. 1, 2, 3 and 4. The forward edge portions 41A of the ferrule 41 are configured to conform to the angular inclination of the bristle pack 38 and the base 39, while rearward edge portions 41B of the ferrule 41 are configured to extend generally perpendicularly relative to the body of the bristle pack 38 and to the longitudinal axis 50 of the assembly 30 (see Fig. 3). Conveniently, the brush ferrule 41 can be comprised of sheet metal (presently preferred) or plastic. The brush ferrule 41 may optionally but preferably include one or more raised ridges 41C (here, illustratively three) that extend continuously and circumferentially about the perimeter, or side and end faces, of ferrule 41 in longitudinally spaced relationship relative to one another.

The interior lower sidewall surface portions of the brush ferrule structure 41 may be secured (mounted) to adjacent portions of the pack base 39 by an adhesive, if desired, or the like, although, as those skilled in the art will appreciate, various securing means may be employed. The ridges 41C provide cavities to accept an adhesive, such as an epoxy resin or the like, that secures the bristles and pack base inside the ferrule, thus helping to stabilize the bristle pack from movement with extended use. The ridges 41C can also enhance the structural integrity of a ferrule 41 and may enhance finger (or thumb) grasping of the ferrule 41 by a painter. Particularly when formed of sheet metal, a brush ferrule 41 may also have a longitudinally extending raised joining ridge 41D (see Fig. 3) located conveniently along a side edge thereof (or elsewhere, if desired) where adjoining terminal edge portions of the sheet member forming the ferrule 41 are interconnected together by crimping, welding or the like.

The brush ferrule 41 extends rearwardly from the bristles 38 and the ferrule 41 here has a rearwardly opening mouth 40 (not detailed, but see mouth 40' in Fig. 3A, for example). The bristles 38, the base 39, and the ferrule 41 taken with interconnection means therebetween can be separately assembled and are considered to be a brush subcombination 42 such as illustrated in Fig.3. A brush subcombination 42 can be conventionally fabricated, and preformed, as those skilled in the art will appreciate, for use in the practice of this invention.

To join the subcombination 42 with a handle connector 43 in the linking subassembly 32, a linking subassembly 44 is provided. The linking subassembly 44, as illustrated in Fig. 3, for example, comprises a secondary brush ferrule 46 and the handle connector 43. The secondary ferrule 46 is connected at its rearward end with the handle connector 43. Preferably, the secondary ferrule 46 and the handle connector 43 are unitarily formed in a single molding operation and are comprised of a plastic, such a high density polypropylene, or the like. Alternatively, the secondary ferrule 46 and the handle connector 43 can each be separately formed, for example, of molded metal or plastic, and can then be bonded together with an adhesive or by sonic welding or the like.

The secondary brush ferrule 46 has an open mouth 47 at its lower or forward end region, and, except at its upper or rearward end region where the secondary ferrule 46 joins with the handle connector 43, the secondary brush ferrule 46 generally has a sleeve-like or hollow configuration. The configuration of the secondary ferrule 46 and of its mouth 47 are such that the lower or forward exterior end regions of the secondary brush ferrule 46 about the mouth 47 are

slidably insertable into the mouth 40 of the brush ferrule 41. The secondary brush ferrule 46 slidably extends in the brush ferrule 41 until edge adjacent portions of the base platform portion 51 of the connector 43 abut against rear edge portions 41B of the ferrule 41. After such an insertion, outside surface portions of the side walls of the secondary ferrule 46 are in laterally adjacent relationship with inside surface portions of side walls of the brush ferrule 41. After such an insertion, the handle connector 43 upstands generally and preferably perpendicularly relative to the ferrules 41 and 46 and to the bristles 38.

The secondary ferrule 46 is preferably adhesively bonded, for reasons of ease and simplicity, to the brush ferrule 41 using an adhesive, such as an epoxy resin, or the like (not shown) that is applied between the adjacent side surface portions of the ferrules 41 and 46. To enhance bonding and adherence of these side surface portions to one another, portions of the sidewall of the secondary ferrule 46 adjacent to the mouth 47 thereof preferably have defined therein a plurality of apertures 48. For similar reasons, between adjacent pairs of the apertures 48 a relatively short longitudinally extending bar 49 is defined. If desired, mechanical fastening means, such as rivets, or the like (not shown), may alternatively be used for mounting the ferrules 41 and 46 in engaged relationship with each other, if desired. The combination of subcombination 42 with linking subassembly 44 comprises the brush subassembly 32. Those skilled in the art will appreciate that a brush subassembly 32 can be variously fabricated.

In, for example, Fig. 8A, an embodiment of a brush subassembly 205 is shown in which the pack base

39' of an associated bristle pack 38' is positioned in the forward region of a brush ferrule 41' through the forward end 41A' thereof. In Figs. 8A, 8B and 8C, parts which correspond to parts in brush assembly embodiment 30 are similarly numbered but with the addition of prime marks thereto for convenient identification purposes. An adhesive (not shown), such as an epoxy resin or the like, is then charged into the rearward end 41B' of the ferrule 41' to bond the pack base 39' to the ferrule 41'. Thereafter, a preliminarily molded handle connector 43'is connected to the ferrule 41' through the rearward end 41B' thereof and then sonically welded or otherwise bonded to the ferrule 41'.

In, for example, Fig. 8B, an embodiment of a brush subassembly 208 is shown in which the pack base 39' of an associated bristle pack 38' is positioned in the forward region of a brush ferrule 41' through the forward end 41A' thereof. The rearward end 41B' of the ferrule 41' can then be connected to a preliminarily molded handle connector 43' and the two components can then be sonically welded or otherwise bonded together. Alternatively, the ferrule 41' and the handle connector 43' can be preliminarily unitarily molded and then the forward end 41A of the resulting ferrule 41' can then be associated with the pack base 39' of the associated bristle pack 38'. Here, in either procedure for associating the handle connector 43' with the ferrule 41', a hole 209 is provided in the ferrule 41', preferably as the ferrule 41' is molded. After the ferrule 41' is associated with the handle connector 43' and the pack base 39', an adhesive (nor shown), such as an epoxy resin or the like, is injected into the hole 209 to bond the pack base 39' to the ferrule 41'.

In, for another example, Fig. 8C an embodiment of a brush subassembly 212 is shown where the pack base

39' of an associated bristle pack 38' is positioned in one side of a mold cavity (not detailed). The top of the pack base 39' is associated with a preformed filler (or spacer) block 213 which can be comprised of wood or plastic and which in brush subassembly 212 is generally trapezoidally configured when viewed in side elevation in order to place the pack base 39' at a desired angle for inclination of the forward end of the bristles 38' in the finished subassembly 212, as those skilled in the art will appreciate. To effectively lock the pack base 39' into the ferrule 41' as molded, the pack base 39' is here provided with a circumferentially extending outwardly extending shoulder 214. Then, a unitarily molded ferrule 41' and handle connector 43' are formed wherein the forward end region of the ferrule 41' is formed around the sides of the pack base 39'. Thus, the brush ferrule 41' and the handle connector 43' are unitarily formed as a molded structure over and about the base pack 39'.

The tool connector 34 of the handle subassembly 31, and the handle connector 43 of the brush subassembly 32, can be regarded as a cooperating pair of connectors since, for connection therebetween to occur, these respective connectors must interconnect with one another. Various structures for each member of such a connector pair can be provided and are within the scope of the present invention.

The tool connector 34 and the handle connector 43 are each bilaterally symmetrical, both laterally and transversely, relative to a (hypothetical) center axis identified illustratively as 50 in Fig. 3 for present descriptive purposes. Thus, the handle connector 43 is engageable with the tool connector 34 (assuming the spatial orientation of the tool connector 34 is fixed) in either of two different handle connector 43 spatial

orientations that are 180 degrees apart from each other relative to the tool connector 34. While symmetrical connector pairs are preferred, those skilled in the art will appreciate that, in a connector pair, each one of the connectors can be asymmetrical, if desired.

The handle connector 43, as shown, for example, in Figs. 3 and 9, has a generally flat plate-like base platform portion 51 that characteristically extends laterally and transversely and in a plane that is perpendicular to the axis 50. The opposite broad side edge portions 51A of the base platform portion 51 extend generally in straight, parallel relationship to each other. The opposite narrow or end side edge portions 51B of the base platform portion 51 are each convexly curved and preferably approach a hemicircular curvature, and the respective curvatures of each opposite end side edge 51B are generally opposed to each other. The bottom of the base platform portion 51 is connected to the upper or rearward end region of the second ferrule 46. What can be regarded as connecting structural elements, which are now described, of the handle connector 43 are preferably unitarily formed with the base platform portion 51 and generally upstand perpendicularly relative to the top of the base platform portion 51 and to the center axis 50.

Each lateral (or end) opposite side 51B of handle connector 43 and of base portion 51 is provided with an upstanding post or pedestal 52. Each post 52 has an upper, outer end portion 52A that is rounded transversely and laterally outwardly from an apex region

In laterally and inwardly spaced relationship to each post 52 is an upstanding elongated arm 53. Each arm 53 extends rearwardly from connection at its base or shoulder end with base platform portion 51. Each arm 53 extends longitudinally out beyond its adjacent post 52.

Each arm 53 is resilient and laterally somewhat flexible. At a longitudinal location 58 along each arm 53 that is beyond each post 52, each arm 53 is thickened and formed into an elongated, inwardly inclined, concave portion 54 when viewed in side elevation from the adjacent side end portion 51B of base platform portion 51. In a connector 43, and a corresponding mating connector 34, the concave portions 54 can be alternatively configured as described, for example, hereinbelow. The outside face 54A of the concave portion 54 of each arm 53 is provided with a pattern, here illustratively a corrugated-type pattern, for ease in user finger association, as below described. To enhance structural stability, each arm 53 is preferably and as shown provided on an inside surface region thereof that medially and longitudinally extends from below to above the location 58 with a preferably unitarily formed rib member 56. The arms 53 are structured and/or configured so that each is laterally flexible and, when so flexed, is yieldingly biased so as to be laterally urged to return to its initial or rest position, as shown, for example, in Fig. 3 or 9.

Between the center axis 50 and each arm 53 is an upstanding elongated leg 59 so that a pair of legs 59 is provided. Each leg 59 extends rearwardly and upwardly from connection at its base or shoulder end with base platform portion 51. Each leg 59 is transversely broad at its base and tapers along its opposite sides out to a location 61. Thus, when a handle subassembly, or brush cover or brush skirt is slid over the tapered portion of the legs 59, the front edges of the handle or brush skirt are guided over the base 51 smoothly and also mate with the slots 37 to help provide more lateral stability. Each leg 59 extends longitudinally out beyond its adjacent arm 53. Each leg

59 is transversely broadened in width relative to its lateral thickness. Each leg 59 in a region proceeding longitudinally from the base platform 51 up to a location 61 therealong progressively declines in transverse width so that such region each leg 59 when viewed in side elevation resembles a trapezoid with equal but oppositely inclined sides.

Above the location 61, the legs 59 symmetrically incline inwardly relative to each other until they meet and combine at a location 62. The resulting combined single leg 63 further extends longitudinally to a location 64 that is somewhat beyond the upper ends of the concave portions 54. Here, at location 64, the single leg 63 terminates and joins, preferably unitarily, with a transversely flattened, upright, ring-like structure 65 whose vertical diameter lies along the center axis 50 and whose horizontal diameter extends medially relative to the underlying base platform portion 51. The legs 59, the leg 63 and the ring-like structure 65 can be considered to comprise a rearwardly extending centrally located projection 67 of the handle connector 43.

Those skilled in the art will appreciate that in the handle connector 43, the component elements, including the base platform portion 51, the posts 52, the arms 53 and associated concave portions 54, the legs 59 and 63, and the ring-like structure 65, can have various forms and configurations.

The tool connector 34, as shown, for example, in Figs. 3, 3A, 6, 7, 8 and 16, is typically, preferably, and as shown integrated with the handle 33 to an extent that it is difficult to discern exteriorly where the forward portion 33A of handle 33 ends and the tool connector 34 begins as when the handle 33 and tool

connector 34 are unitarily molded of the same plastic material, or the like.

Conveniently, opposite exterior broad side faces 34A of the tool connector 34 are generally flat and smooth while opposite interior broad side faces 34B of the tool connector 34 adjacent the mouth 36 are provided with notches 37, preferably two, although more or less (including one or even zero) notches 37 can be present, if desired, depending upon the structure chosen for the structure of the tool connector 34 and the cooperating handle connector 43. As described below, the notches 37 are preferably matingly associatable with predetermined interior portions of the handle connector 43, here opposite side portions of the legs 59 adjacent to their base regions. To enhance such association, the bottom surface of each of the notches 37 is beveled or inclined, as shown.

The tool connector 34 defines therewithin a forward generally cross-sectionally rectangular primary cavity 69, the cavity 69 being generally defined transversely by a pair of opposed, relatively broad, flattened side walls 71 and laterally by a pair of opposed, relatively short, flattened end walls 73. Although the side walls 71 are each generally flattened in a short region longitudinally extending rearwardly from the mouth 36 of the tool connector 34, the side walls 71 thereafter, proceeding rearwardly, each curve inwardly and symmetrically towards each other and towards the center axis 50. Concurrently, although the end walls 73 remain straight (or flat), the rearward opposed edge portions of the end walls 73 taper inwardly, usually symmetrically and usually at a curvature rate generally corresponding to the curvature rate of the sidewalls 71, towards the center axis 50. Thus, a rearwardly extending secondary cavity or channel

76 becomes defined by the side walls 71 and the end walls 73, and the secondary cavity 76 extends back longitudinally inside the tool connector 34 from an adjoining, interconnecting relationship with the primary cavity 69.

In an opposed portion of each of the end walls 73 in the secondary cavity 76 a window 77 is defined. Each window 77 has a perimeter configuration that corresponds to that of the perimeter configuration of the concave portion 54 of each arm 53.

In addition, optionally but preferably, portions of the opposed side walls 71 in the region of the channel 76 are provided with stabilizer ridges 78 that in effect reduce the width between the side walls 71.

Laterally outwardly extending from each of the end walls 73 in opposed relationship to each other is a portico portion 79.

Those skilled in the art will appreciate that in the tool connector 34, the component elements, including the side walls 71, the end walls 73, the overhanging porticos 79, and, when present, the stabilizer ridges 78, and the exact locations and shapes thereof, can have various forms and configurations.

The handle connector 43 is generally configured to be generally nestably, matingly and slidably receivable in the tool connector 34 through the mouth 36 thereof by preliminarily manually inserting the rearwardly extending portions of the handle connector 43 into the mouth 36 of the tool connector 34. Preferably and as shown, the lateral distance between the concave portions 54, particularly adjacent to their outermost extent, is such as to be slightly less than the lateral distance across the cavity 76 preferably beginning in

the region where the walls 71 and 73 are narrowing down to define the cavity 76.

When the handle connector 43 is slidably inserted into the tool connector 34, the concave portions 54 become compressed or flexed inwardly by camming action between the concave portions 54 and adjacent portions of the end walls 73. The distance of each window 77 from the mouth 36 is such that, at about the maximum permissible extent of handle connector 43 longitudinal intrusion into and nesting within the tool connector 34, each of the concave portions 54 becomes aligned laterally with a different window 77. Since the compression of the concave portions 54 has caused each of the arms 53 to flex inwardly, each arm 53 is placed under a spring tension. Thus, when the alignment between the windows 77 with concave portions 54 occurs, the concave portions 54 each move laterally outwards and into the respective adjacent window 77, thereby reversibly interlocking the connectors 34 and 43, and their respective subassemblies 31 and 32, together.

Also, as the handle connector 43 moves into the tool connector 34, the outer end regions of each post 52 become received in, located adjacent to, portions of one of the porticos 79.

In addition, as the handle connector 43 moves into the tool connector 34, the ring-like structure 65, as held and supported by the legs 59 and 63, is extended into the innermost region of the secondary cavity 76. Particularly when the stabilizer ridges 78 (or equivalent) are present, leading and side surface portions of the ring-like structure 65 become engaged with, or become located adjacent to, portions of the wall portions 71 and 73 and (if present) the ridge portions 78 when the connectors 34 and 43 are engaged.

When the handle connector 43 is fully engaged with the tool connector 34, the interconnection therebetween is relatively monolithic, stable, and strong, as desired. The component elements of the tool connector 34 cooperate and associate with the component elements 43 of the handle connector 43. The configuration of the interconnected connectors 34 and 43, and their subassemblies 31 and 32, in the assembled brush 30 is illustrated, for example, in Figs. 7, 12 and 13.

Although, in the bristle pack 38, the front or forward ends of the component aligned bristles are arranged so as to define a generally straight, angularly inclined forward surface 38A relative to the body of the bristles 38, the bristles can be arranged to define a generally straight forward edge surface that extends perpendicularly to the bristle pack axis.

For example, in Fig. 3A, an alternative embodiment 81 of a paint brush assembly 81 of the invention is shown in an exploded form (similar to Fig. 3). Components in the paint brush assembly 81 that are similar to components in the paint brush assembly 30 are similarly numbered but with the addition of prime marks thereto for convenient identification purposes except that, since the same handle subassembly 31 is employed, the same numbering is used here as in assembly 30 for the handle subassembly. Paint brush assembly 81 incorporates a bristle pack 38′ wherein the bristles 38′ are arranged so as to achieve a perpendicularly extending forward surface 38A′ (relative to the body of the pack 38′ and to the axis of the assembly 81) as well as a corresponding perpendicularly extending rear surface. Like the subcombination 42, the construction of the subcombination 42′ is conveniently and preferably conventional. In the brush assembly 81, the ferrule 41′

uniformly extends and has parallel top and bottom edge portions.

The subcombination 42' likewise engages with the linking subassembly 44'. The handle connector 43' corresponds to the handle connector 43 of linking subassembly 44. Connector 43 is engageable with the tool connector 34.

Here, however, the secondary ferrule 46 of the linking assembly 44' is provided adjacent to the connector 43' with a transversely thickened region or band 55 that terminates in an outwardly extending shoulder 57. The shoulder 57 limits the extent to which the secondary brush ferrule 46 can slidably extend into the brush ferrule 46.

The handle connector 43 is disengageable from the tool connector 34 when the concave portions 54 are depressed, as by manually applied pressure, thereby releasing the portions 54 from the windows 77 and permitting the brush subassembly 32 and its handle connector 43 to be slidably withdrawn from the handle subassembly 31 and its tool connector 34.

The engaged relationship achieved in the present invention between the handle connector 43 and the tool connector 34 provides a paint brush assembly 30 or corresponding assembly 81 that is strong and durable permitting not only indefinite usage, including, for example, many cycles of engagement, usage in painting, disengagement, bristle cleaning, and re-engagement of connector 43 with connector 34, but also indefinite usage of the same handle subassembly 31 with various other different bristle pack subassemblies 32 or other tool heads that are likewise disengagably engageable with the handle subassembly 31, as hereinafter described.

Typically and commonly when in use, a paint brush is inclined at an angle, such as illustrated for the brush assembly 30 in Fig. 1 where the brush assembly 30 is illustratively being used to paint a flat board 66. When a paint brush, such as brush assembly 30, is in usage held and inclined at an angle, a substantial amount of stress can develop at the region of any ferrule structure that interconnects a brush portion with a brush handle portion. The stress varies from nothing to substantial values during the process of a single painting procedure. Unless there is a stable, sturdy, interlocked relationship between a disengageable brush portion and handle portion, such as is achieved by the present invention, it is believed that an assembly of a handle means and a bristle means, such as commonly occurs in the prior art, has at most only a short use life that is commercially impractical because the stresses and changing stresses tend to cause rapid wear and loosening of the connection means employed between such components.

The connectors 34 and 43 have many applications, as those skilled in the art will appreciate.

(B) Alternate Handle Subassembly

As indicated above, the handle subassembly 31 can be variously alternatively fabricated, if desired. Illustrative alternate handle subassemblies are shown, for example, in Figs. 14, 15, 15A, 16, 17 and 18. Elements in these alternate handle subassemblies that are similar to those in subassembly 31 are similarly numbered but with the addition of prime marks thereto for convenient identification purposes.

(C) Alternate Brush Subassemblies

The brush subassembly 32, including the subcombination 42, the linking subassembly 44, and the

handle connector 43, can be variously alternatively structured and fabricated. Alternative brush subassemblies are shown, for example, in Figs 3A, 14-17, and 19-23.

(D) Alternative Brush Assemblies

An alternative paint brush assembly 95 is illustrated in Fig. 14. Components of assembly 95 which are similar to components in the paint brush assembly 30 are similarly numbered but with the addition of prime marks thereto for convenient identification purposes. The paint brush assembly 95 incorporates a handle subassembly 31' that is associated at the forward end 33A' of its handle 33' with a preferably unitarily formed tool connector 34' comprised of molded plastic or metal.

The paint brush assembly 95 also incorporates a brush subassembly 32' that is comprised of a brush subcombination 42' and a linking subassembly 44'. The brush subcombination 42' incorporates a bristle pack 38', a pack base (not shown, but comparable to the pack base 39' in paint brush embodiment 81 of Fig. 3), and a brush ferrule 41'. The bristle pack 38' has generally straight forward edge surface portions and rear edge surface portions that each extend generally perpendicularly to the bristle pack 38' and its longitudinal center axis 100. The ferrule 41' circumferentially extends around the rear end region of the bristle pack 38' and has parallel top and bottom edge portions.

The linking subassembly 44' incorporates a secondary brush ferrule 46' and a handle connector 96 that are preferably unitarily formed by molding and comprised of plastic or metal. In addition to apertures 48', the secondary ferrule 46' is provided with circumscribing ridges 107 for added reinforcement and

improving the binding surface thereof. The mouth 47' of secondary brush ferrule 46' is adapted to be inserted into the open mouth 40' of the brush ferrule 41'. Adjacent surface portions of ferrules 46' and 41' can be bonded together with an adhesive (not shown) if desired. The handle connector 96 has a base platform portion 97 that may be compared to base platform portion 51 of handle connector 43.

Unitarily formed with the base platform portion 97 on the upper surface thereof are (a) a pair of laterally spaced arms 101, each one located equally distant from the center axis 100 of the assembly 95 and also of handle subassembly 31', brush assembly 32' and linking subassembly 44', (b) a rearwardly extending projection 99 located generally along the axis 100, and (c) a pair of posts or pedestals 98, each one located at a different lateral opposed side edge of the base platform portion 97. The base platform portion 97, the arms 101, the projection 99, and the pedestals 98 of the handle connector 96 may be compared to the base platform 51, the arms 53, the projection 67, and the pedestals 52 of the handle connector 43.

If desired, the pedestals 98 can be formed with hollow interior portions. The interior edge-adjacent portions of pedestals 98 are each adapted to locate adjacent to overhanging portico portions 79' of the handle subassembly 31', but the pedestals 98 are each larger in lateral width upon base platform 98 than the corresponding width of the pedestals 52 of handle connector 43. The larger pedestal 52 width here (for equal subcombination 42 and 42' widths) is made possible by a reduction in the lateral width of the central region of the handle connector 96 that is occupied by the arms 101 and by the projection 99 compared to the corresponding lateral width of the central region of the

handle connector 43 that is occupied by the arms 53 and by the projection 99.

Each of the vertically (relative to base platform portion 97) upstanding arms 101 is laterally flexible and terminates at its open outer end portion 102 in a laterally outwardly extending, barb- or arrow-like thickening.

The rearwardly extending portion 99 comprises a vertically upstanding (relative to base platform portion 97) leg 103 that has a thickened base portion 103A and a terminal outer end portion 103B that connects with in a ring-like structure 105.

When the handle connector 96 (with its associated secondary ferrule 41') is slidably inserted through the mouth 36' into the tool connector 34' and connected therewith, the interrelationship between the end walls 73' of tool connector 34' and the barb-like ends 102 of arms 101 is such that the arms 101 become yieldingly inwardly flexed and spring biased. When the barb-like ends 102 become aligned with the windows 76' of the tool connector 34, the ends 102 spring into the windows 76' and the handle connector 96 thereby becomes reversibly interlocked with the tool connector 34'. Concurrently, the ring-like structure 105 is lodged in adjacent relationship with rear interior portions of the tool connector 34', and also peripheral interior edge-adjacent portions of the pedestals 98 become lodged adjacent to portico portions 79'.

When the handle subassembly 31' is engaged with the brush subassembly 32', manual lateral compression of the ends 102 towards one another at the windows 77' releases the handle connector 96 from the tool connector 31' and enables the handle connector 96 to be slidably withdrawn from the tool connector 34'.

An alternative paint brush assembly 110 is illustrated in Figs. 15, 16 and 17. The handle subassembly 31' and the handle connector 96 of the brush assembly 110 are similar to the handle subassembly 31' and the handle connector 96, respectively, of the brush assembly 95 and each is similarly numbered for convenience. Also, except as explained below, the brush subcombination 42' of the brush assembly 110 is similar to the brush subcombination 42' if the brush subcombination 42' of the brush assembly 95 and is similarly numbered for convenience.

Centrally in each of the broad opposed sides of the brush ferrule 41' of the brush subcombination 42' a generally oval window 119 is provided.

A linking subassembly 118 having a secondary brush ferrule 113 is provided. The ferrule 113 comprised of two pieces 113A and 113B. The pieces 113A and 113B are symmetrical and located in opposed relationship relative to each other, and both pieces 113A and 113B are generally U-shaped in lateral cross-section and are elongated longitudinally relative to the brush assembly 110. An end edge portion of each piece 113A and 113B is connected in spaced, adjacent relationship to a different bottom opposed side edge region of the base platform portion 97 of handle connector 96. Across the mid-region of the secondary ferrule 113, the corresponding opposite longitudinally extending side end portions of each piece 113A and 113B are in spaced, parallel, aligned relationship with one another. The configuration and orientation of each piece 113A and 113B is such that the pieces can be slidably inserted into the mouth 40' of the brush ferrule 41' so that each piece 113A and 113B is adjacent a different internal end side region of the ferrule 41', and also so that the edge adjacent portions of the base

platform portion abut against edge portions 41B' of the brush ferrule 41' when the linking assembly 118 is fully engaged with the brush ferrule 41'.

From the bottom of the base platform 97, medially between the opposite side end portions of each piece 113A and 113B, and in spaced, adjacent relationship along an edge region of each opposed long side of the base platform 97, a different respective laterally flattened bottom leg 114 and 115 is located. Each leg 114 and 115 projects longitudinally and forwardly. Although the mid-region each leg 114 and 115 extends generally in a co-planar manner relative to the longitudinal axis 111 of the assembly 110, each leg 114 and 115 is somewhat outwardly inclined relative to the base platform portion 97 when in a rest configuration or position. Each leg 114 and 115 is transversely flexible and transversely deflectable from its respective rest position, and, when so flexed, exhibits a spring tension urging the leg back to its rest position. Each leg 114 and 115 at its forward end terminates in an oval configured flattened disk-like member 116 and 117, respectively. The configuration and orientation of each of the members 116 and 117 corresponds to the configuration and orientation of each of the windows 119 in brush ferrule 41'.

Preferably, the handle connector 96, the secondary ferrule 113 (both pieces 113A and 113B thereof), and the legs 114, 115 and their connected members 116 and 117 are unitarily formed of a molded plastic or metal. The resulting structure comprises the linking subassembly 118. If desired, the linking subassembly 118 can be fabricated from separately formed components, as those skilled in the art will appreciate.

When the secondary ferrule 113 of the linking subassembly 118 is slidably inserted through the mouth

40', the legs 114, 115 are preliminarily manually deflected transversely to an extent sufficient to permit the legs 114, 115 and their respective connected members 116, 117 to fit into, and to slidably extend within, the ferrule 41'. The interrelationship between components, and the length of the legs 114, 115 is such that, near or at the end of the complete insertion, the members 116, 117 each become aligned with a different window 119. Concurrently, edge adjacent portions of the base platform portion 97 abut against rear edge portions 41B' of the brush ferrule 41'. The members 116, 117 move transversely outwards, responding to the spring bias applied by the legs 114, 115, and engage the windows 119, thereby locking the linking subassembly 118 and members 116, 117 to the brush subcombination 42' and windows 119.

When the linking subassembly 119 is engaged with the brush subcombination 42', manual lateral compression of the members 116, 117 towards one another at the windows 119 releases the members 116, 117 from the windows 119 and enables the linking subassembly 119 to be slidably withdrawn from the brush ferrule 41'.

The handle connector 96 disengagably engages the handle subassembly 31' in the manner above described in relation to the paint brush assembly 95.

A further alternative paint brush assembly 122 is illustrated in Fig. 15A. Except for the utilization of a tertiary brush ferrule 123, as described below, the paint brush assembly 122 is similar to the paint brush assembly 110. Components of the assembly 122 that correspond to the components of the assembly 110 are similarly numbered for convenient identification purposes.

The tertiary brush ferrule 123 has a generally rigid, sleeve-like configuration and is preferably

molded of plastic or metal, but may, if desired, be fabricated from a starting sheet material. The configuration of the ferrule 123 is such that it is slidably engageable through the mouth 40' with the brush ferrule 41'. Preferably and as shown, the upper rearward end of the ferrule 123 is provided with an outwardly extending shoulder portion 124 that is adapted to abut against and limit travel of the ferrule 123 into the ferrule 41'. Extending about the ferrule 123 in lower forward end portions thereof a plurality of apertures 124 are defined. The ferrule 123, as engaged with the ferrule 41', can be permanently secured thereto, if desired, by means of an adhesive, such as an epoxy resin or the like (not shown), applied between adjacent side surface portions of these ferrules, and the apertures 124 enhance bonding and adherence of these side surface portions to one another.

Centrally in each of the broad, opposed sides of the tertiary ferrule 123, and longitudinally positioned between the shoulder portion 124 and the apertures 124 thereof, a generally ovally configured window 126 is provided. The windows 126 (comprising a pair) may be considered to correspond to the windows 119 in the brush ferrule 41' of the brush assembly 110 except that, in the present assembly 122, the windows 119 are located in the tertiary ferrule 123. The windows 126 correspond in configuration and orientation to that of the members 116 and 117.

In the assembly 122, the secondary ferrule 113 (including pieces 113A and 113B) of the linking subassembly 118 is sized so as to be slidably engageable with inside surface portions of the tertiary ferrule 123. Also, the secondary ferrule 113 is adapted to be inserted slidably into the upper rearward end of the ferrule 123. When the tertiary ferrule 123 is

positioned in, as above described, the brush ferrule 41', and the secondary ferrule 113 of the linking subassembly 118 is slidably engaged with the tertiary ferrule 123, and also the members 116 and 117 are locked in engaged relationship with the windows 119, the linking subassembly 118 is only separatable from the brush subcombination 42' by removing the tertiary ferrule 123 from the brush ferrule 41'. However, the connector 122 remains disassociately engageable with the tool connector 34' of the handle subassembly 31'.

In the brush assembly 122, the connector 96 is disengagably engageable with the handle subassembly 31', as above described in relation to the brush assembly 95.

(E) Multiple Brush Subassemblies for One Handle Subassembly

In the inventive paint brush assembly, a single basic type of linking subassembly comprising a secondary brush ferrule and an associated handle connector, such as linking subassembly 44 as described above, can be fabricated with different sizes and configurations of secondary brush ferrules. All such fabricated linking subassembly structures can incorporate the same handle connector structure. Thereby, various linking subassemblies can be fabricated that are each connectable through their secondary brush ferrules with a matingly engageable brush ferrule of a different prefabricated brush subcombination comprising a bristle pack, a pack base, and a brush (or bristle) ferrule, such as subcombination 42 as described above. Each resulting combination of linking subassembly and brush subcombination then comprises a brush subassembly, such as brush subassembly 32 as described above. Each such subcombination is disengageably engageable with a handle subassembly that has a matingly engageable tool

connector 34, such as in handle subassembly 31 as described above.

For one example, three illustrative linking subassemblies 44, 84 and 86 are shown comparatively in, respectively, Figs. 9, 10 and 11. The handle connectors 43 in each of linking subassemblies 44, 84 and 86 are structurally identical to one another, and so for present descriptive purposes are similarly numbered in each of these subassemblies 44, 84 and 86. Other components in linking subassembly 44 (described above) that are similar to components in each of linking subassemblies 84 and 86 are correspondingly numbered, but with the addition of prime marks thereto for convenient identification purposes. Only the brush subcombination 42 that is connectable with the linking subassembly 44 is herein shown and described above; however, subcombination 42 is representative so that, except as otherwise noted, the brush subcombination for each of subassemblies 84 and 86 is similarly constructed, but is correspondingly larger in size and configuration than subcombination 42, as those skilled in the art will readily appreciate.

In the linking subassembly 84, the secondary brush ferrule 88 is larger (wider) than the secondary brush ferrule 46 of linking assembly 44, and, in the linking subassembly 86, the secondary brush ferule 89 is larger (wider) than the secondary brush ferrule 88 of the linking assembly 84. Each of the secondary brush ferrules 46 and 88 have a front edge portion 46A and 88A that is inclined from one end side to the opposite end side thereof, while the rear edge portions 46B and 88B, respectively, extend perpendicularly from one end side to the opposite end side thereof. Thereby, each secondary brush ferrule 46 and 88 is adapted to accommodate and associate with the brush ferrule of a

brush subcombination wherein the bristle pack front edge portion and rear edge portion each extend at an inclined angle relative to bristle pack lateral side edge portions, as illustrated by the brush subcombination 42 that is associatable with the linking subassembly 44 as above described herein (see Fig. 3, for example). The secondary brush ferrule 89, however, has a front edge portion 89A and a rear edge portion 89B that each extend perpendicularly from one end side to the opposite end side thereof. Thereby, the secondary brush ferrule 89 is adapted to accommodate and associate with the brush ferrule of a brush subcombination wherein the bristle pack front edge portion and rear edge portion each extend perpendicularly relative to bristle pack side edge portions, as illustrated by the (smaller) brush subcombination 42' that is associatable with the (smaller) linking subassembly 44' as above described herein (see Fig. 3A).

The linking subassembly 84 and the linking assembly 86 each have a pedestal pair 91 and 92, respectively, that upstands to the same height as the post or pedestal pair 52 of linking subassembly 44. However, in each of linking assemblies 84 and 86, the respective members of each pedestal pair 91 and 92 extends laterally outwards to the side edge portions of each of the associated secondary ferrules 88 and 89, respectively, as illustrated in Figs. 10 and 11. The effect is that the pedestal pairs 91 and 92 function to improve the strength and the stability of the respective linking assemblies 84 and 86 when they are each engaged through their respective handle connectors 43 with the tool connector 34 of a handle subassembly 31 (not detailed, but see Fig. 3, for example). Preferably, and as shown, the base platform 51 of a handle connector 43 that is in combination with a particular pair of

associated opposite side pedestals 52, such as the respective pedestal pairs 91 and 92 utilized in the linking subassemblies 84 and 86, respectively, extends laterally outwards so as to overlie the upper or rearward end region of an associated secondary brush ferrule, such as ferrules 88 and 89, respectively. Thus, the lateral variations in size of members of a pedestal pair, together with the width of a base platform, are utilized to adapt a given handle connector for use with different sizes of secondary brush ferrules.

For another example, three illustrative alternative linking subassemblies 128, 129 and 130 are shown comparatively in, respectively, Figs. 20C, 20B and 20A (in order of increasing size). The handle connectors 96 in each of linking subassemblies 128, 129 and 130 are structurally identical to one another, and so for present descriptive purposes are similarly numbered in each of these subassemblies 128, 129 and 130. The handle connector 96 is above described herein (see Fig. 14). The linking subassemblies 128, 129 and 130 are each similar to the linking subassembly 118 above described herein (see Figs. 15, 16 and 17), and so corresponding components thereof are similarly numbered, but with the addition of prime marks thereto for convenient identification purposes.

Each of the linking subassemblies 128, 129 and 130 shown in Figs. 20C, 20B and 20C, respectively, is connected to a common handle subassembly 31' and also to a connectable brush subcombination 132, 133 and 134, respectively, the handle subassembly 31', and the brush subcombinations 132, 133 and 134 each being shown fragmentarily and in phantom for present illustrative purposes. Each brush subcombination 132, 133 and 134 is thus assembled with its associated linking

subassembly 128, 129 and 130 into a brush subassembly 136, 137 and 128, respectively, that is connected to a handle subassembly 31'. For present comparative purposes, (a) the tool connector 34' of the handle subassembly 31', with which each handle connector 96 is connectable, is shown in fragmentary longitudinal section in Fig. 19, (b) a bottom plan view of each linking subassembly 128, 129 and 130 is shown in Figs. 21C, 21B and 21A, respectively, (c) a representative top plan view of the linking assembly 128 is shown in Fig. 23, and (d) an end elevational view representative of each linking subassembly 128, 129 and 130 is shown in Fig. 22.

From Figs. 19 through 23, it is seen that, for a given handle subassembly 31' and its associated tool connector 34', various brush subassemblies, such as subassemblies 136, 137 and 138, are disassociatably associatable therewith. In these structures, the pedestal pair lateral size for each handle connector varies in proportion to the size, especially the lateral width, of a bristle pack. Also the locking legs, and their associated terminal tab-type members, in a linking subassembly, which are connectable with the brush ferrule of a brush subcombination, may vary in size, placement, and configuration, if desired, depending upon the receiving windows provided for the tab-type members in the connectable brush ferrules.

Different embodiments of paint applicator (including brush) subassemblies can be fabricated for disconnectable connection with a handle subassembly, as those skilled in the art will readily appreciate.

(F) Brush Prop

Optionally, a brush subassembly, such as, for example, a brush subassembly 32 (see Fig. 3), can be

provided with an erectable brush prop for supporting a brush assembly 30 (see Figs. 24-29).

In the inventive paint brush assembly, a brush prop is pivotably connected to a brush ferrule, as above explained. The brush prop has a storage configuration where the prop is located along and adjacent to a side portion of a brush ferrule and also an erected usage configuration where the prop extends outwardly from the brush ferrule. When the prop-associated brush subassembly is connected to an engageable handle subassembly, the prop, when erected, enables a painter to lay down the so-equipped brush assembly and maintain the brush bristles in an elevated and inclined position relative to an underlying surface that supports the brush assembly. For instance, when the bristles of a bristle pack-equipped brush subassembly in an assembled brush assembly are associated with fresh paint and the brush subassembly needs to be temporarily released from a painter's grasp, the brush prop can be erected and the brush assembly then rested on a convenient underlying surface with only the brush handle rear end portion and the brush prop contacting the surface.

For example, referring to Figs. 24-29, an embodiment 186 of a brush assembly of the invention is provided that is equipped with a brush prop embodiment 189. The brush assembly 186 incorporates a handle subassembly 31 and a brush subassembly 187 that is similar to brush subassembly 32. Similar components are correspondingly numbered but with the addition of prime marks thereto for convenient identification purposes.

The brush ferrule 41' is equipped with the brush prop 189. The prop 189, when in an elevated and projecting use configuration relative to the brush ferrule 41', such as shown in Figs. 24 and 25, has been erected from a prop 189 storage configuration that is

located along one side of the brush ferrule 41', such as shown in Fig. 26.

Preferably, a brush prop, such as prop 189, is a one-piece, flattened member that is comprised of a metal, such as steel or aluminum or a molded plastic such as polypropylene, and that is adapted to extend outwardly from a brush ferrule, such as brush ferrule 41', when the prop 189 is in its erected configuration relative to the associated brush ferrule 41'.

Various prop configurations can be employed. The prop 189 here has a main body portion 192 and a pair of outstanding legs 193 that each project lengthwise (relative to the brush assembly 186) from a different opposite corner-adjacent region of one side of the flattened member 192.

The prop 189 is pivotably associated with a forward end region of the brush ferrule 41' by means of a conventional twin-leafed hinge 191 (not detailed, see Fig. 29) wherein the leaves of the hinge 191 are pivotably interconnected along an axis defined by respective alternately adjoining leaf edges that provide a pintle-containing channel portion. An outer face of one leaf of hinge 191 is joined to a mid-region of a forward edge portion of the main body portion 192 of the prop 189 while the outer face of the other leaf of hinge 191 is joined to a mid-region of a forward portion of a broad side face of the brush ferrule 41'. The joining means here employed is an adhesive, such as an epoxy resin or the like (not detailed). If desired, mechanical joining means, such as rivets or the like, can be employed. Preferably, the pintle-containing, or mid-region, portion of the hinge 191 falls generally across or over the longitudinal center axis 50 (see Fig. 3) of the brush subassembly 187, and preferably the

pintle portion's pivot axis is generally perpendicular to the longitudinal center axis 50.

A conventional-type, small, spirally coiled spring 196 (not detailed) circumferentially extends about a region of the pintle-containing portion of the hinge 191. The opposite ends of the spring 196 are each formed to outstretch and extend generally radially and perpendicularly outwardly relative to the body of the spring 196. One end of the spring 196 effectively rests against an adjacent surface portion of the main body portion 192 of the prop 189. The opposite end of the spring 196 effectively rests against an adjacent surface portion of the brush ferrule 41'. The coiling of the spring 196 is such that the spring 196 opposite ends are yieldingly urged in respective opposite directions relative to each other so that the spring 196 yieldingly urges the prop 189 into a fully erected configuration relative to the brush ferrule 41', such as the configuration illustrated in, for example, Fig. 25. This fully erected prop 189 configuration, as illustrated in Fig. 25, is preferably about 90 degrees or somewhat greater than 90 degrees away from the folded or storage configuration (shown in Fig. 26). This fully erected configuration for prop 189 is set and limited by the hinge 191 which is provided with conventional stop protrusions in its central portion that limit the extent of hinge 191 leaf opening, or the maximum open angle achievable between the two hinge leaves, when the hinge 191 is in its maximum open position, such as the angle existing with the illustrative prop 189 configuration shown in Fig. 25.

When the prop 189 is in the open or erected configuration shown in Fig. 25, the legs 193 project outwardly. The terminal ends of the legs 193 in combination with the rear open end of the handle 197 of

the handle subassembly 187 provide in effect three points or a tripod-type stand whereon the brush assembly 186 can rest when the assembly 186 is an inclined orientation, such as illustrated in Fig. 24, relative to an underlying support surface (not detailed), such as a table, a floor, or the like, as those skilled in the art will readily appreciate.

When the prop 189 is to be taken from the open configuration and placed into a stored or retracted configuration, the prop 189 is manually pivoted about the pintle portion of the hinge 191 against the yielding bias provided by the spring 196 so as to bring the prop 189 into an adjacent relationship with the adjoining side face of the brush ferrule 41', such as illustrated in Fig. 26.

A conventional Z-shaped (preferred), or C-shaped, in side elevation, catch 197 is provided (see Figs. 27 and 28, for example) which has respective upper and lower legs interconnected by a middle leg or body portion. The middle leg of catch 197 extends through a short slot 199 in an elongated catch base plate 198 whose peripheral lower surface edge portions are bonded to adjacent surface portions of the brush ferrule 41' by means of an adhesive or the like. The catch plate 198 is located over and is preferably longitudinally aligned with the center axis 50 (see Fig. 3) of the brush subassembly 187. The upper and lower legs of the catch 197 retain the catch 197 in engaged relationship with the slot 199 and the catch plate 198, and the middle leg of catch 197 is slidably moveable along the slot 199.

When the prop 189 is positioned and manually retained in its storage configuration against ferrule 41', the catch 197 is manually moved slidably along the slot 199 until the upper leg of the catch 197 extends over and engages an edge adjacent portion of the main

body portion 192 of prop 189, this portion being generally and preferably medially situated between the legs 193. Since the spring 196 urges the prop 189 into its erected position, once the catch 197 so engages the prop 189, and the manual retaining force holding the prop 189 against the adjacent side surface of the ferule 41' is released, the catch 196 functions to retain the prop 189 in its folded configuration, as desired.

When the catch 197 is moved backwards (relative to the prop 189) in the slot 199 to an extent that the catch 197 is separated from the body 192, then the catch 197 elevates to its upright or prop extended position.

(G) Paint Can Opener

Whether or not a brush assembly is provided with a prop, as an optional feature, the terminal rear portion of a handle of a handle subassembly can optionally be equipped with a paint can opener. A paint can opener can be regarded as a flat headed tool that is similar to a conventional flat headed screw driver and that is adapted to be inserted into the cavity conventionally existing between a paint can lid edge and a radially adjacent paint can mouth edge portion. When a paint brush handle is equipped with a paint can opener, the handle can function as a lever arm for actuating and utilizing the paint can opener, as those skilled in the art will readily appreciate.

In the present invention, various paint brush assembly handle subassembly structures can be utilized for association with a paint can opener.

One presently preferred combination of handle subassembly and paint can opener is shown in Fig. 18. A handle subassembly 140 is comprised of two separately molded but mutually connectable handle subassembly halves 141 and 142. Each half is unitarily molded.

When half 141 is matingly engaged with half 142 by aligning edge portions of half 141 with corresponding edge portions of half 141, and bringing such edge portions into contacting engagement with one another, the halves 141 and 142 can be bonded together to comprise a handle subassembly 140 in such regions of edge contact by sonic welding, by an adhesive, or by thermal treatment, as those skilled in the art will appreciate.

To aid in aligning, in bonding, and in enhancing strength of the resulting handle subassembly 140, the edge portions of the half 142 are provided with a plurality of spaced upstanding pegs 143, and the edge portions of the half 143 are provided with a corresponding plurality of holes (not detailed) that are adapted to receive thereinto individual ones of the pegs 143. To improve the structural integrity of each half 141 and 142, various internal supports and braces can be provided, if desired. For example, a unitarily formed cross plate 161 adjacent the neck region of the half 142 of handle subassembly 140 is shown illustratively. (A corresponding plate in the half 141 is not shown.)

After being bonded together, predetermined apertures are defined by each of the halves 142 and 141 exist at predetermined locations along the edge region where the halves 141 and 142 join. One set of these apertures comprises a pair of windows 146 which are located and configured to receive therein individual ones of tabs defined on outfacing end regions of each of the arms of a handle connector, such as, for example, connector 43. The windows 146 are located in opposed relationship relative to each other in the rearward end portion of a tool connector 147, such as the tool connector 34, that is provided at the forward end of the handle subassembly 140. Another aperture defines the

mouth 148 of the tool connector 147, such as the mouth 36 of the tool connector 34. The tool connector 147 maybe considered to be a generic representation of a tool connector such as is provided by the present invention.

Another aperture 149 is provided at the rear end of the handle subassembly 140 through which extends the flat tip portion 151 of the plate 152 of a paint can opener. The plate 152 is preferably formed from heavy sheet steel. The plate 152 is positioned in the handle assembly 140 when the halves 141 and 142 are being assembled. The edge portions of the plate 152 are sized so that the plate 152 is accommodated within the space between the halves 141 and 142 with the plate edge having portions that are adjacent to the joint where the halves 141 and 142 join, thereby tending to limit movement of the plate 152 within the handle subassembly 140.

The half 142 is additionally provided with a pair of preferably unitarily molded sockets 153 and 154. Each socket is defined by a cylindrical side wall that upstands preferably vertically from the inside surface of the half 142 so that a central generally upstanding cylindrical channel 156 and 157 is provided in each socket 153 and 154, respectively. Though not detailed, the other half 142 is provided with a pair of preferably unitarily molded rods. Each rod upstands preferably vertically from the inside surface of the half 141, and each rod is aligned for slidably engaging with a different one of the channels 156 and 157.

The plate 152 is additionally provided with a pair of holes 152 and 153. Each hole is positioned so as to fit over or above a different channel 156 and 157. When the half 141 is brought into engagement with the half 142, the rods of half 141 become seated in each

channel 156 and 157. The rods and the sockets 153 and 154 function to hold, position and stabilize the plate 152 in the handle subassembly 140 when the halves 141 and 142 are bonded together as above described.

When the tip 151, as it extends through and from the aperture 149, is engaged with a paint can and utilized to pry open the paint can lid, the relationship between the plate 152 and the sealed together halves 141 and 142 provides the structural strength needed for such a job.

(H) Brush Handle Soft Covering

If desired, the handle subassembly, for example, the handle subassembly 140, of a paint brush assembly of the invention, optionally can have, as illustrated in Fig. 18 a portion of its handle provided with a covering 209 that is comprised of a soft, easily gripped plastic.

(I) Brush Skirt

Referring to Figs. 30-33, there is seen an embodiment 251 of a brush skirt of the present invention. The brush skirt 251 is relatively elongated and has a generally hollow or tube-like configuration with generally continuously extending opposed broad side walls 252 and interconnected opposed end (or narrow side) walls 253.

A brush skirt is well adapted for use with a paint brush having a bristle pack that is generally cross-sectionally rectangular and that is associated with a brush ferrule that circumscribes a rearward portion of the bristle pack; however, the brush skirt is adaptable for use in many paint and paint related applications. A brush skirt is generally configured so that paired opposite side portions thereof are adapted to slidably extend in generally adjacent relationship over exterior side portions of a brush ferrule.

The brush skirt 251 may be fabricated of formed sheet metal or of molded plastic (the latter being presently preferred and here shown). The brush skirt 251 has an open rear end 254 and an opposite open forward end 256. The rear end 254 extends perpendicularly relative to the side walls 252 and also to the brush skirt longitudinal axis 250 while the forward end 256 extends diagonally relative thereto, thereby, as explained below, to conform the forward end 256 to the forward end 41B of a brush ferrule 41 and associated bristle pack 38, such as in the paint brush assembly 30 (hereinabove described, see Fig. 3, for example; also here described below, see Figs. 33-35). Forward, laterally extending portions 255 of each of the side walls 252 that are located adjacent to the forward end 256 and that extend across the lateral width of each side wall 252 are inwardly somewhat tapered, preferably symmetrically relative to each other. Thus, a mouth is defined at the forward end 256 which has a width that is somewhat less than the width transversely across the longitudinally adjacent broad side portions 252 of the brush skirt 251 and also transversely through of an associated bristle pack forwardly of the brush ferrule 41. The end walls 253 are each outwardly (convexly) longitudinally rounded uniformly, preferably symmetrically relative to each other, thereby to conform the end walls 253 to fit over and adjacent to a brush ferrule, such as the brush ferrule 41.

Each end wall 253 is provided with a medially located and longitudinally extending narrow slot 257 that extends from forward end 256 rearwardly preferably (and as shown) more than half the longitudinal length of the respective associated end wall 253. thus enabling each of the end walls 353 to be spread apart or expanded transversely and diagonally along the slot 257 beginning

at the forward end 256. Preferably, the interior terminus 258 of each slot 257 is enlarged (relative to the slot 257) into a circular configuration or the like, thereby to enhance the capacity of each slot 257 to be so transversely expanded (as when the when the brush skirt 251 is being used, as explained below) without producing cracking or splitting or other material disruption of the end walls 253 beyond the terminus 258, as those skilled in the art will appreciate. Between the terminus 258 and the rear end 254, the end walls 253 are resilient and elastic. On an outside surface portion 259 of each end wall 253 between the terminus 258 and the rear end 254 a ribbed design or the like is preferably provided, thereby to enhance finger and thumb grasping of the brush skirt 251 when the brush skirt 251 is being associated with, or moved along, or separated from, a brush assembly, such as brush assembly 30, as described below.

To enhance association of the brush skirt 251 with adjacent portions of the brush ferrule 41 of brush assembly 30, as below described, a plurality of laterally extending, spaced but adjacent, interior surface regions 259 is preferably and as shown provided on each of the interior surfaces of side walls 252 located longitudinally behind, but adjacent to, each of the lateral portions 255. Each region 259 is provided with small rib-like projections or the like that are adapted to increase friction, and to enhance the ability of such interior surface regions 259 to remain in contact with adjacent forward side surface portions of the brush ferrule 41 during usage of the brush skirt 251 with paint brush assembly 30 as described below.

A brush skirt 251 conveniently may be associated with a brush assembly 30, or, if desired, with the brush subassembly 32 of the assembly 30 before

the brush subassembly 32 is interconnected with the handle subassembly 31 (see Figs. 33-35). Preliminarily, a user spatially orients the brush skirt 251 relative to the brush assembly 30 so that the slope of the forward end 256 is roughly parallel to the slope of the forward edge portions 41A if the brush ferrule 41. The interrelationship between the brush skirt 251 and the brush ferrule 41 is such that the forward end 256 of the brush skirt 251 is manually slidably extendable over, for example, the rearward edge portions 41B of the ferrule 41 followed by the body portions of the brush skirt 251. The forward end 256 becomes transversely spread apart and the slots 257 each transversely enlarge. The configuration of the brush skirt 251 and the brush ferrule 41 when the forward end 256 of the brush skirt 251 is about transversely adjacent to the forward edge portions 41A of the ferrule 41 is shown illustratively in Fig. 33. This configuration constitutes a convenient storage location for the brush skirt 251 when the brush skirt 251 is engaged with the ferrule 41 but is not in an operative configuration therewith.

To place the brush skirt 251 in an operative configuration with the brush assembly 30, the brush skirt 251 is manually slid forwardly over the ferrule 41 until the opposite side portions of the forward end 256 and the opposed lateral portions 255 of the brush skirt 251 transversely overlie and engage portions of the bristle pack 38 that are adjacent to the forward edge portions 41A of the ferrule 41, as shown illustratively in Figs. 34 and 35. In this configuration, the end walls 252 and their respective associated slots 257 have preferably returned to their rest configuration, such as shown, for example, in Fig. 30, and the transversely adjacent opposite side regions of the bristle pack 38

are slightly compressed by the opposing portions 255 at the forward end 256. In this configuration, the brush skirt 251 functions, as desired, to greatly reduce and even substantially eliminate the tendency for fresh paint on the bristle pack 38 to flow against the forward edge portions 41A of the brush ferrule 41 such as can occur when, in use, a brush assembly 30 is inclined so that the brush subassembly 32 is elevated above the handle subassembly 31.

When desired, for example, at the end of a painting operation, when it is desired to clean bristle pack 38, the brush skirt may be slidably longitudinally moved and either placed into a storage configuration, such as shown in Fig. 33, or completely separated from the brush subassembly 32, as those skilled in the art will appreciate.

Another embodiment 261 of a brush skirt is shown in Figs. 36 and 37. The brush skirt 261 is similar to the brush skirt 251 and similar portions are correspondingly numbered but with the addition of prime marks for convenient identification purposes. The brush skirt 261 has a forward end 262 which extends perpendicularly to the end walls 252' and to the longitudinal axis 250'; thereby, the brush skirt 261 is adapted for association with a brush assembly, such as brush assembly 81 (hereinabove described, see Fig. 3A, for example).

Compared to the brush skirt 251, the brush skirt 261 is similarly engaged with, and disengaged from, the brush assembly 81, and, when so engaged with the brush skirt 261 in an operative configuration with the brush ferrule 41', the assembly has a configuration such as illustrated in Fig. 38.

Another embodiment 266 of a brush skirt is shown in Fig. 39. The brush skirt 266 is similar to

the brush skirt 251 and similar portions are correspondingly numbered but with the addition of prime marks for convenient identification purposes. The brush skirt 266 has a forward end 267 which extends perpendicularly to the end walls 253' and to the longitudinal axis 250'. Adjacent to the forward end 267' of the brush skirt 266 a pair of camming shoulders 268 is preferably provided on opposing interior surface portions of each of the side walls 252', thereby to facilitate the placement of the brush skirt 266 relative to a brush ferrule, such as a brush ferrule 41'. The brush skirt 266 thus is adapted for association with a brush assembly, such as the brush assembly 110 (hereinabove described, see Fig. 15, for example).

Compared to the brush skirt 251, the brush skirt 266 is similarly engaged with, and disengaged from, the brush assembly 110 (see Figs. 40 and 41). The configuration of the brush skirt 266 and the brush ferrule 41' when the forward end 267 of the brush skirt 266 is about adjacent to the forward edge portions 41A' of the ferrule 41' is shown illustratively in Fig. 40. This configuration constitutes a convenient storage location for the brush skirt 266 when the brush skirt 266 is engaged with the ferrule 41' but is not in an operative configuration therewith.

To place the brush skirt 266 in an operative configuration with the brush assembly 110, the brush skirt 266 is manually slid forwardly over the ferrule 41' until the forward opposite side portions of the forward end 267 and the opposed lateral portions 255' of the brush skirt 266 overlie and engage transversely adjacent portions of the bristle pack 38' that are adjacent to the forward edge portions 41A' of the ferrule 41', as shown illustratively in Fig. 41. In this configuration, the end walls 252' and their

respective associated slots 257' have preferably returned to their rest configuration, as shown, for example, in Fig. 39, and the transversely adjacent opposite side regions of the bristle pack 38' are slightly compressed by the adjacent opposing portions 255' at the forward end 267. In this configuration, the brush skirt 267 functions, as desired, to greatly reduce and even substantially eliminate the tendency for fresh paint on the bristle pack 38' to flow against the forward edge portions 41A' of the brush ferrule 41', such as can occur when, in use, a brush assembly 110 is inclined so that the bristle pack 38' is elevated above the handle subassembly 31'.

Those skilled in the art will readily appreciate that various alternative configurations and arrangements for a brush skirt of the invention can be utilized, if desired. The inventive brush skirt is suitable for use with a wide variety of paint brushes.

(J) Packaging

If desired, an individual brush subassembly or handle subassembly of a paint brush assembly of the invention can be provided with a removable package or jacket for various purposes, such as for protection, display or storage.

For example, as shown in Figs. 42 and 43, a jacket 215 is provided for an illustrative brush subassembly 32. The jacket 215 is provided with side and end wall configurations that conform to the respective opposite side and edge configurations of a chosen brush subassembly, here illustratively subassembly 32.

The jacket 215 can be transparent and/or opaque, and can be imprinted with information or legends. While preferably unitarily formed of a plastic sheet or sheet-like material, the jacket 215 can be

formed from a prepared blank that is comprised, for example, of paper or plastic (no seam(s) being shown in jacket 251). A jacket can have various configurations, particularly configurations that conform the jacket to the particular bristle pack assembly to be contained therein.

The opposite ends of the jacket 215 have openings 216 and 217, respectively. The ring-like structures 65 can extend through the slots 217, and thus the subassembly 32, when inserted into the jacket 215 through the slot 216 becomes retained in engaged relationship with the jacket 215.

The brush subassembly 32 may be slidably separated through one end of the jacket 215.

For another example, as shown in Figs. 44 and 45, to accommodate an embodiment of a brush subassembly 32, as defined by a subcombination 42 with a linking subassembly 44 (as shown in Fig. 3), a similar but different jacket, such as jacket 218, is provided. The jacket 218 may be comprised of components similar to those employed in jacket 215 and is preferably formed unitarily of a molded plastic. In the upper portions of each of its opposed ends walls, the jacket 218 contains a pair of opposed slots 219 that can accommodate portions of the handle connector 43.

In addition, the jacket 218 has defined in each of its lower opposite end and opposite side walls a longitudinally elongated slot 221 and 223, respectively. Each elongated slot 221 extends downwardly from a location that is generally adjacent to the bristles 38.

The bottom or lower end portion of the jacket 218 is open. An aperture 220 is defined in the central or mid regions of the upper end portion of the jacket 218. After the subassembly 32 has been slidably inserted into the jacket 215, is illustrated in Figs. 44

and 45, the ring-like structure 65 of the subassembly 32 extends through the aperture 220.

When the subassembly 32 is suitably oriented and aligned with a jacket 218, the subassembly 32 is ready for insertion into a jacket 218, as illustrated in Fig. 45. The rearwardly projecting ring-like structure 65 of subassembly 32 is inserted into the jacket 218 through the aperture defined by the lower end region thereof. The subassembly 32 is then slidably moved upwardly through jacket 218. In the jacket 218, each one of the portions 54 of subassembly 32 enters a different one of each of the slots 221 and slidably moves upwardly in the associated slot 221 in the jacket 218. When the upper end face of each portion 54 reaches the upper end of the associated slot 221, the portions 54 are each cammed inwards by the adjacent portions of the jacket 218 opposite end walls.

As the insertion continues, the portions 54 continue to move upwards until the slots 219 are reached. Since the slots 219 are located and sized to conform to the perimeter dimensions of the portions 54, each of the portions 54 moves into engagement with an adjacent slot 219.

The ring-like structure 65 extends upwardly through the aperture 220 when the engagement between jacket 218 and subassembly 32 is complete. Thus, the ring-like structure 65 can function as an eye for purposes of hanging the jacketed subassembly 32 on a hook or the like for display or storage or other purposes.

A subassembly 32 is disengaged from a jacket 218 by manual depression of the portions 54 to release these tabs from their associated slots 219 whereupon the subassembly 32 is slidably removed from the jacket 218.

Optionally, a lower portion or slot 223 of each broad side wall of the jacket 218 in a region thereof that is adjacent to the lower end edge region thereof can be removed and left open. These open lower portions 223 can be desirable. For example, when bristles 38 have been recently cleaned to remove residual paint, the bristles 38 can be air dried due to the portions 223 and 221.

Optionally, but preferably, the packaging such as jacket 218 is slightly taller than the brush subassembly 32 which serves to protect the bristles from bending when the brush subassembly 32 is being stored on a shelf as distinct from being hung from a hook (using, for example, the ring-like structure 65 of brush subassembly 32).

Optionally, but preferably and as shown, the jacket 218 is provided with a thickened band 224 that extends about the perimeter thereof in a region located between the upper slots 219 and the lower slots 221 and 223. The band 224 functions to structurally reinforce the jacket 218.

Various alternative configurations for jacket 218 can be employed. For example, as shown in Fig. 46, a jacket 226 can be formed that is similar to jacket 218 (and is correspondingly numbered), but that is characterized by the feature that a thin (relative to width) reinforcing brace or bar 227 extends transversely across a lower portion of each of the elongated slots 221 and 223. To insert or remove the assembly 32 from the jacket 226, the portions 54 are inwardly conveniently manually depressed when these tabs encounter a brace 227.

(K) Packaging and Sale

Particularly for purposes of commercialization, engageable subassemblies of a brush

assembly of the invention may not be assembled with a handle subassembly of the invention at the time of sale, but rather subassembly assembly may not occur until after subassembly purchases by a user.

For example, as illustrated in Fig. 47, the handle subassembly 31 may be positioned together with a bristle pack subassembly 32 (see, for example, Fig. 3) on a single display card 231 that is overcovered with a protective transparent plastic sheet member 232. In addition, the card 231 may be associated with a second bristle pack subassembly 233 of different size or the like.

For another example, as illustrated in Fig. 48, a plurality (here, three) different bristle pack subassemblies may be positioned together on a display card 233 that is overcovered with a protective transparent plastic sheet member 234.

(L) Tool Heads Other than Bristle Packs

In a brush subassembly, the bristle pack 38 can be replaced and the brush ferrule 41 alternatively engaged with a tool other than a brush.

For example, as shown in Fig. 49, a bristle pack 41' that is connected to a connector 43 is replaced by a foam-type disposable paint applicator 238.

For another example, as shown in Fig. 50, a bristle pack and a brush ferrule are replaced by a roller-type paint applicator structure 240 that is engaged with a connector 43.

Owing to the use of the same connecter 43 in each subassembly, each is engageable with the same handle subassembly, such as a handle subassembly 31.

It is to be understood that the invention is not limited to the particular structures shown and described, and that changes and adaptations are contemplated which readily and fairly fall within the

spirit and scope of the invention as set forth and determined by the appended claims.